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CHARTING THE COURSE

The Forest Service Grizzly Bear Conservation Program

Northern Region
Intermountain Region

Pacific Northwest Region
Rocky Mountain Region

United States Department of Agriculture | Forest Service | Region 1 | Federal Building
P.O. Box 7669
Missoula, MT 59807

Reply to: 2670

Date: October 1, 1986

Cooperators and Interested Parties:

Recovery of the grizzly bear is one of the great conservation challenges of our time.

The Forest Service has a vital role in the interagency efforts to conserve the bear. Approximately 66 percent of the currently occupied range of 13.3 million acres occurs on National Forests. These lands also provide habitat for other wildlife species, recreation opportunities, wood products, livestock forage, minerals, and watersheds. The principal responsibilities of the Forest Service in grizzly bear conservation are to provide suitable habitat toward viable populations, and to minimize potential for grizzly-human conflicts.

We are pleased to present "Charting the Course": THE FOREST SERVICE GRIZZLY BEAR CONSERVATION PROGRAM." It analyzes the current management situation ("Where We Are"), creates a vision of the desired management situation ("Where We Want To Be"), and provides an integrated and comprehensive program of mission, goals, and objectives for the next 5 years ("How To Get There From Here"). "Charting the Course" is an ambitious yet attainable agenda for grizzly bear conservation.

We want to meet our mandated responsibilities to conserve the grizzly bear and to provide a dynamic balance of multiple benefits from the land. We endorse this program for successfully accomplishing that charge. The two basic priorities for grizzly bear conservation are to: (1) reduce potential for grizzly-human conflicts, and (2) maintain and improve habitat.

In carrying out this program, we seek excellence in technical knowledge and social skills, innovation, quality performance on the ground, and positive service to the public.

In working with cooperators and interested parties, the Forest Service will continue to demonstrate our commitment to grizzly bear conservation through performance.

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"CHARTING THE COURSE"

THE FOREST SERVICE GRIZZLY BEAR CONSERVATION PROGRAM

1986

Prepared By

JOHN WEAVER

Grizzly Bear Habitat Coordinator

"Whatever you can do, or dream you can do, begin it.
Boldness has genius, power, and magic in it."

- GOETHE

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INTRODUCTION

The grizzly bear (Ursus arctos horribilis) once ranged throughout most of the western United States. However, excessive human-caused mortality and loss of suitable habitat resulted in a significant decline in the distribution and abundance of grizzly bears. Today, an estimated 750-900 grizzlies occur in portions of Montana, Wyoming, Idaho, and Washington (Fig. 1).

In 1975, the U.S. Fish and Wildlife Service listed the grizzly bear as a "threatened" species. In the Endangered Species Act of 1973 (as amended), Congress declared that all Federal agencies shall seek to conserve endangered and threatened species and the ecosystems upon which they depend. In 1982, the U.S. Fish and Wildlife Service approved a Grizzly Bear Recovery Plan which identified six recovery areas: (1) Northern Continental Divide, (2) Greater Yellowstone, (3) Cabinet-Yaak, (4) Selkirk, (5) Selway-Bitterroot, and (6) North Cascades.

The USDA Forest Service plays a vital role in grizzly bear conservation because approximately 66 percent of the currently occupied range of 13.34 million acres occurs on National Forest System lands (Table 1). The principal role of the Forest Service is to provide suitable habitat toward recovered populations of grizzly bears and to minimize potential for grizzly-human conflicts. Areas

identified in the revised Grizzly Bear Recovery Plan for recovery or evaluation include over 14 million acres of National Forest lands that also provide habitat for other wildlife species, recreation opportunities, wood products, livestock forage, minerals, and watersheds.

Recovery of the grizzly bear is one of the great conservation challenges of our time. The Forest Service has provided significant leadership in grizzly bear conservation in recent years including the Guidelines for Management Involving Grizzly Bears in the Greater Yellowstone Area (1979) which evolved into the Interagency Grizzly Bear Guidelines (1986), the Grizzly Bear Recovery Plan (1982), the Interagency Grizzly Bear Committee and Subcommittees (1983-present), the interagency "Bear Us In Mind" information campaign (1983-present), Grizzly Bear Habitat Symposium (1985), and a Forest Service Grizzly Bear Policy (1985). In addition, the Forest Service has enacted numerous on-the-ground measures for affirmative conservation of the grizzly bear.

In 1985, the Forest Service created a National Grizzly Bear Habitat Coordinator (GBHC) position to underscore its continued commitment to grizzly bear conservation. John Weaver was selected for that position with a charge to develop and help implement an integrated Forest Service program for continued excellence in grizzly bear conservation.

During the first year, the GBHC conducted "sensing sessions" with Forest management teams, other Federal and State agencies involved with grizzly bears, researchers, and various interest groups. He also reviewed previous grizzly bear management plans and efforts, Forest Plans, and other pertinent documents such as the Northern Region Grizzly Bear Workshop (1984) and the Tixier Task Force on Public Communications/Awareness (1985).

The result is this strategic document "Charting The Course": THE FOREST SERVICE GRIZZLY BEAR CONSERVATION PROGRAM. The document addresses the technical, organizational, and sociopolitical dimensions of grizzly bear conservation. It analyzes the current management situation ("Where We Are"), creates a vision of the desired management situation ("Where We Want To Be"), and provides an integrated program of mission, goals (3), and objectives for a 5-year (1987-1991) horizon ("How To Get There From Here").

"WHERE WE ARE"

ANALYSIS OF THE MANGEMENT SITUATION

Numerous frameworks exist for analyzing management situations from an organizational viewpoint. The one presented here addresses the technical, organizational, and socio-political dimensions of grizzly bear conservation (see Tichy, N. M. 1983. Managing Strategic Change. John Wiley & Sons. New York. 434 pp.). Although a dissertation could be written on grizzly bear conservation from an organizational perspective, the purpose here is to report the key findings.

The organizational environment can be described as quite complex and diverse due to the number and diversity of grizzly bear recovery ecosystems (6), number of involved Forest Service Regions (4) and National Forests (18), number and interdependence of other Federal (4) and State (4) agencies and landholding corporations (3) involved, and the number and variety of land uses, interest groups, and representatives.

It is quite dynamic due to natural and induced changes in the landscapes of the grizzly bear ecosystems, change in public demand for different mixes of benefits and values, turnover of personnel in key positions both within the Forest Service and in other involved agencies, and advances in technology.

The organizational environment is controversial due to clashes over resource values and goals, lack of consensus on some technical problems and solutions, differences in legislated mandates, competition for limited space and resources, and inconsistent communications.

It is uncertain due to incomplete technical information on bear populations (size, density, and trend) and recovery needs, behavior (variability of responses), and habitat (capability, location, dynamics, and response to management); and due to ambiguity in management direction and administration.

Technical Dimension

Conservation of grizzly bears and their ecosystems is technically complex requiring substantial knowledge of grizzly bear populations and habitat relationships, information on the structure, dynamics, and location of plant communities, and skill in managing vegetation using timber harvesting, grazing, and fire.

Studies of grizzly bear habitat relationships, particularly diet, have been conducted in various portions of grizzly range (see Proceedings of Grizzly Bear Habitat Symposium and the International Conferences on Bear Research and Management). Although the grizzly bear may be regarded as an opportunistic omnivore, it does have definite needs for proteins and fats in the spring and for sugars and fats in late summer and fall. Understanding of grizzly bear habitat relationships is still rudimentary concerning (1) landscape patterns of key habitats that provide for the spatial and temporal needs of the bear, (2) variability in habitat relationships between ecosystems, and (3) linkages between population abundance and habitat to establish habitat capability (or "carrying capacity").

Inventories and maps of vegetation types for the grizzly bear recovery ecosystems is requisite for successful management. Grizzly bear habitat mapping efforts in the past suffered from incomplete descriptions of habitat components that were also unrelated to common vegetation classifications and from incomplete and inconsistent mapping. The Forest Service is now mapping its lands within the different recovery ecosystems using standardized habitat types, seral community types, and habitat components (non-forested). Such a classification provides an expression of both the potential and the current vegetation on a particular site. It is adaptable to new information on grizzly bear habitat values and useful for management of other wildlife species and land resources.

Inventory and mapping of lands outside wilderness should be completed soon using conventional aerial-photo interpretation and extensive field verification. LANDSAT MSS imagery, coupled with terrain models developed through intensive sampling of vegetation types, appears suitable for mapping large wildernesses. In particular, MSS imagery provides a very cost-effective and entirely adequate method for habitat inventory of the (Selway-) Bitterroot and North Cascades grizzly bear evaluation areas.

Nearly every human activity in grizzly country can affect the bear's habitat and/or habitat use and may in turn pose a risk of direct grizzly-human conflict and subsequent mortality. The Forest Service has participated with the U.S. Fish and Wildlife Service (USFWS), the Bureau of Land Management (BLM), the National Park Service (NPS), and the State wildlife agencies in the development of the "Interagency Grizzly Bear Guidelines." Furthermore, in Forest Plans, the Forest Service has developed resource standards and guidelines that coordinate grizzly bear management with other land uses (e.g., wildlife, timber/fire, range, recreation, and minerals).

Considerable expertise exists in the Forest Service for managing vegetation through silvicultural, fire, and range prescriptions. Such talent could be used more effectively for maintaining or improving grizzly bear habitat. Mapping of the vegetation and land uses in grizzly bear ecosystems will allow managers to proactively identify opportunities and coordinate land uses. Efforts to enhance habitat/habitat use should focus on key spring and late summer-fall sites.

Grizzly bear populations are below viable levels in several ecosystems due to excessive human-caused mortality and lack of augmentation. Preliminary analysis of mortality records indicate that human-associated attractants (food, garbage, game meat, and horsefeed) and associated control actions, domestic sheep allotments, and opportunistic illegal kills are important factors. Efforts to minimize potential for grizzly-human conflicts have improved substantially in recent years and need continued emphasis and improvement. An environmental analysis of augmenting the Cabinet-Yaak grizzly population is in process. The (Selway-) Bitterroot and North Cascades ecosystems have huge expanses of land that could be critical to long-term conservation of the grizzly bear in the conterminous United States. The connection between British Columbia and several grizzly bear recovery ecosystems in the U. S. (Northern Continental Divide, Cabinet-Yaak, Selkirks, and North Cascades) should be recognized and addressed.

Even though the effect on grizzly bears of any single resource activity (e.g. logging, mining, increased back-country use, etc.) may not be great, the cumulative impact of all such activities over space and time may indeed be substantial. The Forest Service is currently leading an interagency effort to further develop, implement, and verify a computerized process for evaluating and managing the cumulative effects of resource activities on grizzly populations. The model will permit simulation of proposed changes in land use and prediction of the associated consequences for grizzly bears. With this model a manager will be able to ask a series of "what if ...?" questions and to explore the relative consequences of each. The model will also allow the

managers to determine which activity contributes most to the simulated effects, and whether a given land use influences habitat per se, habitat use, and/or survivorship of grizzly bears.

Managers now have two standard and quantified measures of progress toward grizzly bear recovery objectives: (1) habitat effectiveness (integrates habitat quality, abundance, and availability) and (2) mortality risk. Although efforts to improve habitat effectiveness and reduce mortality risk are often complementary, priority usually should be placed on minimizing potential for conflicts and associated mortality.

Research and monitoring are essential elements of any successful resource program and need more emphasis in the Forest Service Grizzly Bear Conservation Program. Habitat research should focus on (in descending priority): (1) habitat relationships (in certain ecosystems) and habitat capability (viz. the Cumulative Effects Models), (2) models of vegetation succession (viz. logging and fire), and (3) autecology and biogeography of selected plant species. Monitoring should focus on (1) administration of this Grizzly Bear Conservation Program and on-the-ground implementation of measures to improve habitat effectiveness and reduce mortality risk, and (2) trends in grizzly bear populations and habitat.

In conclusion, substantial technical progress has been achieved in "getting it together" for grizzly bear conservation. Basic research on habitat

relationships, habitat mapping, development of interagency guidelines and cumulative effects models, and methods for minimizing conflicts represent major accomplishments. Although additional research and development is needed, the challenge is to integrate and implement what we already know. Thus, in the organizational and socio-political dimensions lies the real crucible of grizzly bear conservation.

Organizational Dimension

There is a strong desire among Regional Foresters to provide visible leadership in grizzly bear conservation with a strategic program that is comprehensive and well integrated. This will require (1) a clear statement of the mission of the Forest Service in grizzly bear conservation that addresses purpose and guiding philosophy, and (2) development and implementation of strategies for maintaining or improving grizzly bear habitat effectiveness and for minimizing grizzly-human conflicts.

Appropriate design, processes, and culture enhance an organization's capability to achieve its mission and goals.

Organizational design for facilitating interagency management of grizzly bears has improved significantly with the Interagency Grizzly Bear Committee (IGBC)

and its various subcommittees. With four ecosystems involved in the Northwest Ecosystems Subcommittee, its effectiveness could be improved by having informal "working groups" and a Forest Supervisor representative for each ecosystem. Connections between IGBC (and subcommittees) and resource administrators and biologists in British Columbia need to be strengthened.

Some extremely important grizzly bear habitat (particularly spring and fall ranges) occurs on private land within and adjacent to public lands. Improper developments on these key private parcels can have disproportionately severe impacts on grizzly bear conservation. Connections with county governments and the private sector need formal and systematic attention.

Several laws (National Environmental Policy Act, Endangered Species Act of 1973, and the National Forest Management Act) have provided clear direction for the conservation of threatened and endangered species and the ecosystems upon which they depend. These laws and attendant agency regulations provide for organizational processes to insure proper implementation and public involvement.

In 1985, the IGBC proposed that the "Guidelines for Management Involving Grizzly Bears in the Greater Yellowstone Area" be used by all involved agencies in all occupied grizzly bear ecosystems. A synopsis of the Guidelines appeared in the Federal Register in May 1985, and public meetings were held in numerous

towns in June and July. In December 1985, the IGBC approved four changes in the Guidelines and their adoption as the "Interagency Grizzly Bear Guidelines." Final notice appeared in the Federal Register in 1986.

These Guidelines are a landmark document in grizzly bear conservation. Proper and rigorous implementation of the Guidelines by each involved National Forest would significantly advance the mission and goals of the Forest Service Grizzly Bear Conservation Program.

Greater use of management techniques such as pilot projects, task forces, decision analysis, and risk assessment would aid the decision-making process. Development, implementation and monitoring of a "Grizzly Bear Conservation Check-list" would aid analysis and provide greater consistency in project planning. Cumulative Effects Models will provide tremendous capability as they become fully operational.

A process for linking Forest Plans and projects in grizzly country is needed. Development of tactical, 5-year project plans, with specific prescriptions and scheduling for specific areas (e.g. Bear Management Units), in consultation with the U.S. Fish and Wildlife Service could bring more certainty and stability to management.

Grizzly bear conservation is a significant issue with broad, long-term ramifications requiring corresponding commitment of organizational resources

(budget, staff support, training, and education). Budget allocations for grizzly bear management have been variable over time and between involved Regions. Although this document will chart the course from a national perspective, an annual meeting of pertinent WO and RO staff is requisite for ensuring proper coordination and allocation of budgets.

The characteristics of the organizational environment have created a tremendous need for effective processing of information vertically through the line positions, horizontally across geographic and functional units, as well as outwardly to the public and representatives. In particular, there is an opportunity to share "what is working" among managers in different grizzly bear ecosystems. A 2-3 day shortcourse on grizzly bear management would be helpful for line and staff.

Both internal and independent reviews of the Forest Service Grizzly Bear Conservation Program could benefit organizational effectiveness. A consolidated annual report of accomplishments, concerns, and opportunities could promote awareness of the Forest Service role and record in grizzly bear conservation.

Organizational culture is that intangible glue that bonds a group of people to the shared values embodied in the mission and goals of the organization. The Forest Service has a strong, palpable culture and has long been respected for its professional integrity and competence in land management.

The concept of land management and underlying values has changed over the years, as reflected in various legislation. The culture of the Forest Service is adapting to these changes in values.

Conservation of threatened and endangered species is one such value, and the grizzly bear is one of the most powerful symbols. Successful conservation of the grizzly bear is particularly challenging because managers need a broad geographic perspective and a long-term outlook coupled with an ability to integrate national and local interests.

Unity of purpose and cultural identity could be strengthened by top management in the Forest Service communicating its commitment to grizzly bear conservation to all levels of the organization. A recognition/reward system could emphasize individual performance more in interdisciplinary, long-term aspects. Rewards for innovation or interdisciplinary team accomplishments in support of the grizzly bear conservation mission could be established.

In conclusion, the IGBC structure provides a good organizational design to facilitate grizzly bear conservation. Actual on-the-ground accomplishments ultimately will depend upon cultural commitment to appropriate management processes and practices.

Socio-Political Dimension

Grizzly bear conservation takes place in a socio-political arena. It is a complex and often controversial task requiring considerable management skill. Much of the controversy arises from clashes between competing interest (value) groups over resource allocation whereas some of it develops from distorted information or inadequate communication about grizzly bears and their management.

The IGBC has recognized the importance of information, education, and public involvement in grizzly bear conservation. It approved a "Bear Us In Mind" Public Information/Education Plan (March 1986) developed by a special Task Force.

There is a tremendous need for proactive dissemination of information about grizzly bears (ecology and behavior) and their management. Information techniques should focus on newspaper articles, television spots and specials, trailhead displays, and personal contacts.

Grizzly bear conservation is a long-term proposition requiring support by an educated citizenry. Special emphasis should be given to education of young people about grizzly bears.

Information and education efforts should focus on several themes, including

- Grizzly/Human Coexistence
- Grizzly Bear Habitat Needs and Careful Integration with other Land Uses
- Proper Hiking and Camping Practices in Grizzly Country
- Proper Identification

Public involvement and communications in the past have been perceived by some as closed, impersonal, infrequent, untimely, and unfocused. A tremendous opportunity exists for regular "show-me" trips with groups of mixed interests from local and national levels to discuss grizzly bear conservation. Training in interpersonal communication skills for conflict management would be beneficial.

In conclusion, many people in many places have made information and education efforts through the years. The most visible interagency efforts have been the "Bear Us In Mind" program (1983) and its recent rejuvenation. Public and congressional involvement in grizzly bear conservation has been intensive. The essence of the sociopolitical dimension is the everyday communication with people of differing interests. It may not be altogether pleasant, but it comprises much of the challenge in grizzly bear conservation.

"Where We Want To Be"

DESIRED MANAGEMENT SITUATION

Recovery of the grizzly bear is one of the great conservation challenges of our time. An analysis of the current management situation reveals an organizational environment that is quite complex, diverse, and dynamic with substantial controversy and uncertainty. The current management situation can be enhanced.

A fundamental question is: Where do we--the Forest Service--want to be? The answer: We want to successfully meet our responsibility in grizzly bear conservation and to provide a dynamic balance of multiple benefits and values

from the land. We want to establish our leadership through excellence in technical knowledge and social skills, innovation, quality performance on the ground, and positive service to the public.

By implementing Charting The Course: THE FOREST SERVICE GRIZZLY BEAR CONSERVATION PROGRAM, the management situation in 1991 could have greater certainty, less hostility, and better management of the complexity, diversity, and dynamics . . .

x x x x

Grizzly bear populations would be progressing toward or be at recovery levels. They would have suitable habitat available with minimum opportunity for human conflicts. A dynamic balance of multiple benefits and values would flow from National Forest lands on a sustained basis.

Land managers would have computerized maps of entire ecosystems displaying both the existing and potential vegetation at a fine resolution (1-5 ac). They would have considerable information about plant communities: composition and structure, successional pathways, value to grizzly bears, and responses to changes resulting from timber harvesting, fire, or grazing. All of this information would be readily available in a Grizzly Bear Habitat Handbook for each recovery ecosystem. Land managers would be using a variety of

prescriptions developed by interdisciplinary teams of creative resource professionals to maintain or improve grizzly bear habitat and to minimize potential for grizzly-human conflicts.

The land manager of the future would have broad perspectives and be thinking at the ecosystem or landscape level. He or she would be using a Cumulative Effects Model with Geographic Information Systems to simulate proposed land uses and to explore consequences. Land managers would be using decision analysis for evaluating alternative courses of action, trying small-scale pilot projects, and adapting management to new information. Development of proactive 5-year action plans (tied to Forest Plans) specific to individual Bear Management Units with favorable Section 7 opinions would provide greater certainty and stability for managers and the public.

The public, particularly key community leaders and Congressional officials, would be better informed to support the grizzly bear conservation program. The general public would have a greater understanding of the grizzly bear, its habitat relationships, and how to properly visit grizzly country. Forest Service efforts to conserve the grizzly and to integrate other land uses and values would be demonstrated.

MISSION

TO CONSERVE THE GRIZZLY BEAR AND THE INTEGRITY OF ITS ECOSYSTEMS BY PROVIDING QUALITY MANAGEMENT OF THE LAND AND POSITIVE SERVICE TO PEOPLE

"The Forest Service cares about . . ."

CONSERVATION!

In this context, conservation means the management of natural resources such that: (1) viable populations of grizzly bears have suitable habitat available with minimum opportunity for human conflicts, (2) a dynamic balance of multiple benefits and values from the land is realized on a continuing basis, and (3) risk of irreversible change or long-term adverse effects as a result of use is minimized to ensure future options. The Forest Service emphasizes an interdisciplinary, ecosystem-oriented approach to grizzly bear conservation that can be adapted to changing conditions and new knowledge.

SERVICE!

Resource conservation is an honorable endeavor calling for the highest standards of positive service and quality performance. The Forest Service has a bias for action and expects innovative performance by skilled and knowledgeable people in an interdisciplinary framework.

COMMUNICATION!

Communication is vital to a positive conservation program. The Forest Service will strive for understanding and trust through communication that is frequent, open, informal, and personal.

THE FOREST SERVICE WILL CONTINUE TO DEMONSTRATE ITS COMMITMENT TO GRIZZLY BEAR CONSERVATION THROUGH PERFORMANCE.

GRIZZLY BEAR CONSERVATION PROGRAM

1987 - 1991

Goals and Objectives

The three major goals of the Forest Service Grizzly Bear Conservation Program are to provide: (1) interdisciplinary management of grizzly bear ecosystems, (2) organizational design, processes, and culture that support grizzly bear conservation, and (3) for information, education, and involvement.

The two basic priorities for grizzly bear conservation are to: (1) reduce potential for grizzly-human conflicts (as measured by an index of mortality risk), and (2) maintain or improve habitat (as measured by "habitat effectiveness" = acres of available habitat x quality).

Areas of program emphasis are: (1) habitat mapping, (2) resource coordination, (3) cumulative effects assessment, (4) habitat maintenance and improvement, (5) reduction of potential for grizzly-human conflicts, and (6) information and education. Each ecosystem will vary in population and habitat conditions and limiting factors and in status of management efforts. As habitat mapping is completed over the next 2-3 years in the four ecosystems with grizzly bear populations, the habitat portion of the program will shift over to habitat maintenance/improvement and management of cumulative effects. Resource coordination, reduction of potential for grizzly-human conflicts, and information and education will continue to be major areas for program emphasis.

GOAL A

PROVIDE INTERDISCIPLINARY MANAGEMENT OF ECOSYSTEMS THAT

MAINTAINS OR IMPROVES EFFECTIVENESS (QUALITY AND AVAILABILITY) OF GRIZZLY BEAR HABITAT

MINIMIZES POTENTIAL FOR GRIZZLY-HUMAN CONFLICTS

SUPPLIES A DYNAMIC BALANCE OF MULTIPLE BENEFITS AND VALUES ON A SUSTAINED BASIS

LEGEND

Who:
- L = Lead
- C = Cooperator
- GBHC = Grizzly Bear Habitat Coordinator (Weaver)

Ecosystem

- GY = Greater Yellowstone
- NCD = Northern Continental Divide
- CY = Cabinet-Yaak
- S = Selkirk
- (S)B = (Selway-)Bitterroot
- NC = North Cascade
- ALL = Involves all ecosystems

Proportional Costs by Forest Service Regions

"GY" = Region 1 - .4
Region 2 - .3
Region 4 - .3

"S" = Region 1 - .7
= Region 6 - .3

"All" = Region 1 - .5
Region 2 - .2
Region 4 - .2
Region 6 - .1

OBJECTIVE 1. Complete the mapping of vegetation, and ungulate seasonal ranges and of human activities in the grizzly bear ecosystems. Vegetation will be classified by habitat type and cover type (successional stage) for forested sites and by habitat component/community type for nonforested sites. Classification and mapping criteria will be standardized within ecosystems and comparable between ecosystems. Independent review of mapping accuracy will be completed in all ecosystems.

Who: (L) Forest Supervisors and Staff

(C) GBHC - Regional T&E Program Managers
Regional/Area Ecologists
Contractors

Costs:

Ecosystem	Year 1987	1988	1989	1990	1991
GY	X	X	X		
NCD	X	X	X		
CY	X	X	X		
S	X	X	X		
(S)B	X	X	X		
NC	X	X	X	X	

OBJECTIVE 2. Develop for each ecosystem a Grizzly Bear Habitat Handbook. Each Handbook will include a description of grizzly bear habitat relationships, a matrix of values by habitat type/community type and successional stage for each season, and a set of land/resource prescriptions.

Who: (L) GBHC

(C) Regional/Area/Forest/Station ecologists, biologists, silviculturalists and managers
State, Federal, and Independent researchers

Costs:

Ecosystem	Year 1987	1988	1989	1990	1991
GY		X	X	X	
NCD	X	X	X		
CY		X	X		
S		X	X		
(S)B*				X	
NC*				X	

*Evaluation of Habitat Suitability

OBJECTIVE 3. Develop for each Bear Management Unit in each occupied ecosystem a tactical Grizzly Action project plan that provides specific prescriptions for specific areas and coordination for other land uses for a 5-year horizon. These should be directly linked to Forest Plans. Each plan will be an interdisciplinary, interagency effort that also addresses Cumulative Effects provides a proactive basis for Section 7 consultations with the Fish and Wildlife Service.

Who: (L) Forest Supervisors and Staff

(C) GBHC - Regional T&E Program Managers
Fish and Wildlife Service
State wildlife agency
Other land management agencies (as appropriate)

Costs:

Ecosystem	Year 1987	1988	1989	1990	1991
GY	X	X	X	X	X
NCD	X	X	X	X	X
CY		X	X	X	X
S		X	X	X	X
(S)B					X
NC					X

OBJECTIVE 4. Complete the Cumulative Effects Models for the occupied ecosystems, including an operational cartographic capability prioritized by Bear Management Unit.

Who: (L) Northern and Intermountain Regions - WL

(C) Interagency CEM Task Forces
GBHC - Regional T&E Program Managers

Costs:

Ecosystem	Year 1987	1988	1989	1990	1991
GY	X	X			
NCD	X	X			
CY		X	X		
S		X	X		
(S)B					
NC					

OBJECTIVE 5. Develop methods for determining habitat capability ("carrying capacity") for a grizzly bear ecosystem and for comparing habitat suitability between ecosystems.

Who: (L) GBHC

(C) Regional/Station ecologists
Contractor

Costs:

Ecosystem	Year 1987	1988	1989	1990	1991
GY, NCD, CY, S, (S)B, NC	X	X			

OBJECTIVE 6. Develop a land adjustment plan on an ecosystem basis for key grizzly bear areas where development would be incompatible with grizzly bear conservation. This could be aggregated from Forest Plans. Identify creative alternatives and seek financing.

Who: (L) Forest Supervisors and Staff

(C) Regional T&E Program Managers - GBHC
State wildlife agency
The Nature Conservancy

Costs:

Ecosystem	Year 1987	1988	1989	1990	1991
GY	X				
NCD	X				
CY	X				
S	X				
(S)B					X
NC					X

OBJECTIVE 7. Design, conduct, and publicize at least one timber sale and/or prescribed burn on each Forest in the occupied grizzly bear ecosystems which explicitly maintains or improves grizzly bear habitat.

Who: (L) Forest Supervisors and Staff

(C) Regional Timber Management Staff
GBHC - Regional T&E Program Managers
Regional/Area Ecologists
Intermountain Fire Sciences Lab
State wildlife agency
Fish and Wildlife Service

Costs:

Ecosystem	Year 1987	1988	1989	1990	1991
GY	X	X	X	X	X
NCD	X	X	X	X	X
CY	X	X	X	X	X
S		X	X	X	X
(S)B					
NC					

OBJECTIVE 8. Include "grizzly bear conservation clauses" in all pertinent leases, contracts, permits, and other authorizations affecting grizzly bears. Monitor for effectiveness.

Who: (L) Forest Supervisors, District Rangers, and Staff

(C) Regional T&E Program Managers
Cooperators

Costs:

Ecosystem	Year 1987	1988	1989	1990	1991
GY	X	X	X	X	X
NCD	X	X	X	X	X
CY	X	X	X	X	X
S	X	X	X	X	X
(S)B					
NC					

OBJECTIVE 9. Develop and implement a grizzly bear habitat research program. Research should focus on (in descending priority): (1) habitat relationships (in certain ecosystems) and habitat capability/suitability (viz. the Cumulative Effects Models), (2) models of vegetation succession (viz. logging and fire), and (3) autecology and biogeography of selected plant species (see Appendix B).

Who: (L) Intermountain Station/GBHC/Regional Foresters

(C) Forest Supervisors
University Researchers
Independent Researchers

Costs:

Ecosystem	Year 1987	1988	1989	1990	1991
GY, NCD, CY, S, (S)B, NC	X	X	X	X	X

OBJECTIVE 10. Install bear-proof containers for food/garbage in developed campgrounds on a strategic schedule and--in the Greater Yellowstone Ecosystem--implement and monitor a pilot program of bear-proof containers at backcountry campsites.

Who: (L) Forest Supervisors/District Rangers

(C) Regional Recreation Staff
Regional T&E Program Managers
Cooperators

Costs:

Ecosystem	Year 1987	1988	1989	1990	1991
GY	X	X			
NCD	X	X	X		
CY	X	X	X		
S	X	X	X		
(S)B					
NC					

OBJECTIVE 11. In cooperation with other agencies, develop an interagency NEPA document for augmentation of the Cabinet-Yaak grizzly bear population. Implement and monitor on a cooperative basis.

Who: (L) Fish and Wildlife Service

(C) Forest Supervisor (Kootenai NF)
R-1 T&E Program Manager - GBHC
Montana Fish, Wildlife and Parks Department
Glacier National Park

Costs:

Ecosystem	Year 1987	1988	1989	1990	1991
GY					
NCD					
CY	X	X			
S					
(S)B					
NC					

OBJECTIVE 12. Develop "white paper" regarding displacement and mortality factors in grizzly country. Complete an "opportunity analysis" regarding current status of displacement and mortality activities with alternatives for meeting the mission and goals of the Forest Service Grizzly Bear Conservation Program.

Who: (L) GBHC ("White Paper")
Forest Supervisors and Staff ("Opportunity Analysis")

(C) Regional T&E Program Managers
State wildlife agency

Costs:

Ecosystem	Year 1987	1988	1989	1990	1991
GY		X			
NCD		X			
CY	X	X			
S		X			
(S)B					
NC					

OBJECTIVE 13. Implement measures (monitoring of livestock allotments, road closures, etc.) to minimize the risks of human-caused mortality of grizzly bears.

Who: (L) Forest Supervisors, District Rangers, and Staff

(C) Regional T&E Program Managers
State wildlife agency
Fish and Wildlife Service
Cooperators

Costs:

Ecosystem	Year 1987	1988	1989	1990	1991
GY	X	X	X	X	X
NCD	X	X	X	X	X
CY	X	X	X	X	X
S	X	X	X	X	X
(S)B					
NC					

GOAL B

PROVIDE ORGANIZATIONAL DESIGN, PROCESSES, AND CULTURE THAT

PROVIDE LEADERSHIP IN GRIZZLY BEAR CONSERVATION THROUGH A STRATEGIC PROGRAM

EMPHASIZE CONTINUING DEVELOPMENT OF TECHNICAL KNOWLEDGE AND SOCIAL SKILLS

ENCOURAGE INNOVATION IN ALL PROGRAM AREAS USING PILOT PROJECTS AND PROBLEM-SOLVING TASK FORCES

FURNISH INCENTIVES AND RECOGNITION FOR QUALITY PERFORMANCE BY INDIVIDUALS AND INTERDISCIPLINARY TEAMS

ENHANCE QUALITY AND CONSISTENCY OF RESOURCE DECISIONS INVOLVING GRIZZLY BEAR CONSERVATION WITH STATE-OF-THE-ART MANAGEMENT TECHNIQUES AND TECHNOLOGY

OBJECTIVE 1. Develop a program document for the Forest Service Grizzly Bear Conservation Program that integrates technical, organizational, and sociopolitical dimensions. It should include a diagnosis of the current management situation, mission statement, goals and objectives, and a 5-year horizon. Conduct a 1-day inter-Regional meeting with all involved Regional Foresters and Forest Supervisors to discuss Grizzly Bear Conservation Program.

Who: (L) GBHC

(C) Regional Foresters and Staff
Forest Supervisors and Staff

Costs:

Ecosystem	Year 1987	1988	1989	1990	1991
GY, NCD, CY, S, (S)B, NC	X		X		

OBJECTIVE 2. Regional Foresters will visit each National Forest involved in grizzly bear recovery to articulate the mission of the Forest Service Grizzly Bear Conservation Program and to personally express their expectations.

Who: (L) Regional Foresters

(C) Forest Supervisors
GBHC

Costs:

Ecosystem	Year 1987	1988	1989	1990	1991
GY	X	X		X	
NCD	X	X		X	
CY	X	X		X	
S	X	X		X	
(S)B	X			X	
NC	X			X	

OBJECTIVE 3. Develop and conduct a 3-day course on grizzly bear management for Forest Service line officer and staff. The course will focus on grizzly bear ecology and behavior (day 1), management-policy, guidelines, cumulative effects assessment, consultations, information and education, conflict management, decision analysis (day 2), and plant ecology and mangement (day 3).

Who: (L) GBHC

(C) Regional/Area Ecologists - Regional T&E Program Managers
State, Federal, and Independent Researchers
Other Agency Representatives

Costs:

Ecosystem	Year 1987	1988	1989	1990	1991
GY		X		X	X
NCD	X		X		X
CY		X		X	
S		X		X	
(S)B				X	
NC				X	

OBJECTIVE 4. Develop and distribute an annual report on the Forest Service Grizzly Bear Conservation Program. For each of the six grizzly bear ecosystems, the report should state current population and habitat conditions and limiting factors. It should summarize accomplishments in the following program areas: (1) habitat mapping, (2) resource coordination, (3) cumulative effects assessment, (4) habitat maintenance and improvement, (5) reduction of potential for grizzly-human conflicts, and (6) information, education, and involvement. The report should identify management concerns and opportunities. It should be developed in conjunction with the IGBC Subcommittees and serve as Forest Service input to the IGBC annual report.

Who: (L) GBHC - Regional T&E Program Managers

(C) Forest Supervisors and Staffs, Intermountain Station, and Cooperators

Costs:

Ecosystem	Year 1987	1988	1989	1990	1991
GY NCD CY S (S)B NC	X	X	X	X	X

OBJECTIVE 5. Any land management decision may differentially affect the distribution and abundance of key grizzly bear habitat components. Hence, the manager will have to deal with trade-offs involving preferences for different positive outcomes with different probabilities and different financial concerns. For example, a manager may have to decide between one treatment improving the fall value of an area and another enhancing the spring value. Decision analysis is an established discipline in business for enhancing decisions in a similar context. A conceptual framework for decision analysis incorporating both habitat components and mortality risk needs to be developed to "clinch" the cumulative effects analysis process.

Develop a "continuing education" module on using decision analysis and risk assessment in resource decisions involving grizzly bears and their habitat.

Who: (L) Contractor

(C) GBHC
Forest Supervisors

Costs:

Ecosystem	Year 1987	1988	1989	1990	1991
GY					
NCD					
CY		X			
S					
(S)B					
NC					

OBJECTIVE 6. Emphasize Grizzly Bear conservation in conjunction with General Management Reviews to identify opportunities for enhancing the effectiveness of the grizzly bear conservation program.

Who: (L) Regional Foresters

(C) Forest Supervisors
GBHC - Regional T&E Program Managers
Cooperators

Costs:

Ecosystem	Year 1987	1988	1989	1990	1991
GY	X	X	X	X	
NCD	X	X	X	X	
CY	X	X		X	
S	X	X		X	
(S)B				X	
NC				X	

OBJECTIVE 7. Initiate "Most Valuable Team" (MVT) and "Very Innovative Person" (VIP) awards to recognize goal-oriented achievements by interdisciplinary teams and individuals at any organization level. Award presented by Regional Foresters with appropriate publicity.

Who: (L) Regional Foresters

(C) GBHC
Forest Supervisors

Costs:

Ecosystem	Year 1987	1988	1989	1990	1991
GY, NCD, CY, S, (S)B, NC	X	X	X	X	X

OBJECTIVE 8. Initiate and maintain a "Grizzly Tracks" communication service on Data General to keep key line and staff at the WO, RO, Intermountain Station, and Forest levels informed on grizzly bear matters.

Who: (L) GBHC

(C) Regional T&E Program Managers
WO T&E Program Managers

Costs:

Ecosystem	Year 1986	1987	1988	1989	1990
GY, NCD, CY, S, (S)B, NC	X	X	X	X	X

OBJECTIVE 9. Invite Wildlife Management Institute (or similar group) to review the Forest Service Grizzly Bear Conservation Program in 1988.

Who: (L) Chief/Regional Foresters

(C) Forest Supervisors
GBHC - Regional T&E Program Managers

Costs:

Ecosystem	Year 1987	1988	1989	1990	1991
GY, NCD, CY, S, (S)B, NC		X			

OBJECTIVE 10. Develop, implement, and monitor "Grizzly Bear Conservation Check-List" to enhance thorough analysis and consistency in project planning. The "Check-List" would cover habitat effectiveness (suitability and availability) and mortality risks as part of cumulative effects assessment; congruence with Endangered Species Act, Recovery Plan, Forest Service Grizzly Bear Policy, Interagency Grizzly Bear Guidelines, and Forest Plans; interagency coordination; Section 7 consultation; public information and involvement, etc.

Who: (L) Regional T&E Program Managers/GBHC

(C) Forest Supervisors and Staffs
Regional Planning, IO, and Legal
State wildlife agency
Fish and Wildlife Service

Costs:

Ecosystem	Year 1987	1988	1989	1990	1991
GY, NCD, CY, S, (S)B, NC	X	X			

OBJECTIVE 11. Request personnel from State wildlife agency, Fish and Wildlife Service, and cooperators to participate on interdisciplinary teams. Ensure proper Section 7 coordination with FWS on projects involving grizzly bears. Document and send to GBHC for inclusion in Annual Report.

Who: (L) Forest Supervisors/District Rangers

(C) Regional T&E Program Managers
State wildlife agency
Fish and Wildlife Service
Cooperators

Costs:

Ecosystem	Year 1987	1988	1989	1990	1991
GY, NCD, CY, S, (S)B, NC	X	X	X	X	X

GOAL C

PROVIDE FOR INFORMATION, EDUCATION, AND INVOLVEMENT THAT

ENHANCES THE COORDINATION AND DISSEMINATION OF INFORMATION ON THE GRIZZLY BEAR CONSERVATION PROGRAM

IMPROVES UNDERSTANDING OF THE GRIZZLY BEAR AND ITS HABITAT RELATIONSHIPS

MINIMIZES POTENTIAL FOR GRIZZLY-HUMAN CONFLICTS

FURNISHES OPPORTUNITY FOR PUBLIC PARTICIPATION REGARDING RESOURCE DECISIONS IN GRIZZLY COUNTRY

BUILDS PUBLIC SUPPORT FOR THE GRIZZLY BEAR CONSERVATION PROGRAM

*Many of these objectives would be accomplished in collaboration with the IGBC Public Information/Education Task Force.

OBJECTIVE 1. Develop a "Top 100" mailing list of key community leaders, interest groups, and Congressional representatives to receive information on Forest Service Grizzly Bear Conservation Program. Update every 2 years.

Who: (L) Regional IO - T&E Program Managers

(C) Forest Supervisors
Regional Foresters
WO Staff
GBHC

Costs:

Ecosystem	Year 1987	1988	1989	1990	1991
GY	X		X		X
NCD	X		X		X
CY	X		X		X
S	X		X		X
(S)B	X		X		X
NC	X		X		X

OBJECTIVE 2. In conjunction with the IGBC Public Information/Education Task Force, develop a series of monthly newspaper articles entitled "Life and Times of the Grizzly Bear" that would inform the public about the natural history of the grizzly bear, its behavior and ecology (including habitat use). Utilize the "Bear Us In Mind" logo and profiles of radio-collared bears.

Who: (L) Contractor

(C) GBHC - Regional IO
Other IGBC agencies

Costs:

Ecosystem	Year 1987	1988	1989	1990	1991
GY					
NCD					
CY	X		X		
S					
(S)B					
NC					

OBJECTIVE 3. Conduct at least one "show-me" field trip per Forest with mixed groups of community leaders, interest groups, elected officials, and media to discuss and demonstrate the integration of grizzly bear conservation with other land uses/values on National Forests.

Who: (L) Forest Supervisors

(C) GBHC - T&E Program Managers
State wildlife agency

Costs:

Ecosystem	Year 1987	1988	1989	1990	1991
GY	X	X		X	
NCD	X	X		X	
CY	X	X		X	
S	X	X		X	
(S)B			X	X	X
NC			X	X	X

OBJECTIVE 4. In conjunction with the IGBC Public Information/Education Task Force, develop and implement a comprehensive education module for young people regarding grizzly bear conservation to include a theme of integration with other land uses/values on National Forests. Use National Resource Environmental Education concepts.

Who: (L) WO - IO and WL with University and/or National Wildlife Federation

(C) Other IGBC agencies
GBHC
GBRC

Costs:

Ecosystem	Year 1987	1988	1989	1990	1991
GY					
NCD					
CY		X			
S					
(S)B					
NC					

OBJECTIVE 5. Have a Forest Service line officer (Regional Forester or Forest Supervisor) in each ecosystem give one television, newspaper, or radio interview and one presentation to a user-group meeting on grizzly bear conservation and integration with other uses/values on National Forest lands.

Who: (L) Regional Foresters/Forest Supervisors

(C) Regional IO
GBHC - T&E Program Managers

Costs:

Ecosystem	Year 1987	1988	1989	1990	1991
GY	X	X		X	
NCD	X	X		X	
CY	X	X		X	
S	X	X		X	
(S)B		X		X	
NC		X		X	

OBJECTIVE 6. Develop and submit four magazine articles, tailored to specific audiences, (conservation, forestry, livestock, and oil and gas), about grizzly bear conservation and integration with other uses/values on National Forest lands.

Who: (L) Regional Forester - IO

(C) GBHC

Costs:

Ecosystem	Year 1987	1988	1989	1990	1991
GY					
NCD					
CY	X	X		X	X
S					
(S)B					
NC					

OBJECTIVE 7. Install and maintain a total of 60 trailhead displays on various Forests in occupied grizzly bear range with "Bear Us In Mind" messages and photos.

Who: (L) Forest Supervisors, District Rangers, and Staff

(C) Regional Recreation Staff
GBHC - Regional T&E Program Managers

Costs:*

Ecosystem	Year 1987	1988	1989	1990	1991
GY	X	X			X
NCD	X	X	X		X
CY	X	X	X		X
S	X	X	X		X
(S)B			X	X	X
NC			X	X	X

*$2 K/display

OBJECTIVE 8. Reprint "Bear Us In Mind" and "A Last Stand for Grizzly Bears--The Role of the Forest Service" and distribute at Supervisor/District Ranger offices, strategic locations in local communities as appropriate, and to resource users (contractors, lessees, permittees) in grizzly country.

Who: (L) Forest Supervisors and District Rangers - distribution

(C) GBHC - Region 1 } printing
Cooperators

Costs:

Ecosystem	Year 1987	1988	1989	1990	1991
GY, NCD, CY, S, (S)B, NC	X		X		

OBJECTIVE 9. Have Grizzly Bear Habitat Coordinator make one presentation to a professional group or one article on the Forest Service Grizzly Bear Conservation Program.

Who: (L) GBHC

(C) R-1 IO

Costs:

Ecosystem	Year 1987	1988	1989	1990	1991
GY, NCD, CY, S, (S)B, NC	X	X		X	

OBJECTIVE 10. Show "Visiting Grizzly Country" video at Supervisor/District Ranger Offices, especially during peak recreation season. Show to employees and contractors/leesees/permittees for orientation. Keep logbook on number of viewers.

Who: (L) Forest Supervisors/District Rangers

(C) Staff

Costs:

Ecosystem	Year 1986	1987	1988	1989	1990
GY	X	X			
NCD	X	X			
CY	X	X			
S	X	X			
(S)B					
NC					

OBJECTIVE 11. Provide a "demonstration camp" at one major trailhead on each Forest in the Greater Yellowstone Ecosystem during peak recreation times to demonstrate proper camping practices in grizzly country.

Who: (L) Forest Supervisors, District Rangers, and Staff

(C) Regional Recreation Staff
GBHC - Regional T&E Program Managers

Costs:

Ecosystem	Year 1987	1988	1989	1990	1991
GY	X	X		X	
NCD					
CY					
S					
(S)B					
NC					

OBJECTIVE 12. Work with two or three guides and outfitters in each State to serve as role models in making presentations about the Grizzly Bear Conservation Program at their meetings and to educate their clients about grizzly conservation. Provide them with "Bear Us In Mind" materials.

Who: (L) Forest Supervisors

(C) State wildlife agency
Regional Recreation Staff and T&E Program Managers

Costs:

Ecosystem	Year 1987	1988	1989	1990	1991
GY	X		X		
NCD	X		X		
CY	X		X		
S	X		X		
(S)B					
NC					

OBJECTIVE 13. Develop at least one standing exhibit display on the Forest Service Grizzly Bear Conservation Program that can be set up at fairs, malls, and other locations. Show at least at three different locations per year.

Who: (L) Forest Supervisor and Staff

(C) Regional IO
GBHC - Regional T&E Program Managers

Costs:

Ecosystem	Year 1987	1988	1989	1990	1991
GY	X	X	X	X	X
NCD	X	X	X	X	X
CY	X	X	X	X	X
S	X	X	X	X	X
(S)B			X	X	X
NC			X	X	X

OBJECTIVE 14. Reprint the four "Bear Us In Mind" posters and develop a new one emphasizing grizzly-human coexistence. Select appropriate message/poster for use in the various ecosystems and display at strategic access and information points.

Who: (L) R-1 (printing)/Forest Supervisors (display)

(C) Forest Supervisors/Staff (New Poster) with IGBC
GBHC
Regional IO

Costs:

Ecosystem	Year 1987	1988	1989	1990	1991
GY					
NCD	X				
CY				X	
S					
(S)B	X				
NC					

OBJECTIVE 15. Within each ecosystem, promote an opportunity for public participation regarding resource decisions in grizzly country.

Who: (L) Forest Supervisors

(C) Cooperators

Costs:

Ecosystem	Year 1987	1988	1989	1990	1991
GY	X	X	X	X	X
NCD	X	X	X	X	X
CY	X	X	X	X	X
S	X	X	X	X	X
(S)B				X	X
NC				X	X

OBJECTIVE 16. In conjunction with the IGBC Public Information/Education Task Force, develop a statement of value regarding grizzly bears, conservation themes, and a television public service announcement which uses the statement and themes. Show documentary on grizzly bears and their management developed by National Audubon Society in cooperation with IGBC.

Who: (L) GBHC } (Statement and themes)
WO - WL}
Regional IO (PSA)

(C) Regional Foresters
Forest Supervisors
Other IGBC agencies

Costs:

Ecosystem	Year 1987	1988	1989	1990	1991
GY	X	X	X		X
NCD	X	X	X		X
CY	X	X	X		X
S	X	X	X		X
(S)B			X	X	X
NC			X	X	X

OBJECTIVE 17. Make personal contacts in the field with users (particularly recreationists/hunters) to communicate "Bear Us In Mind" message for minimizing potential for grizzly-human conflicts and to ensure compliance with sanitation orders where in effect.

Who: (L) Forest Supervisors/District Rangers

(C) Regional Recreation Staff
State wildlife agencies
Fish and Wildlife Service

Costs:

Ecosystem	Year 1987	1988	1989	1990	1991
GY	X	X	X	X	X
NCD	X	X	X	X	X
CY	X	X	X	X	X
S	X	X	X	X	X
(S)B				X	X
NC				X	X

OBJECTIVE 18. Develop a video to document and display on-the-ground performance that advances the goals of the Forest Service Grizzly Bear Conservation Program.

Who: (L) Regional IO

(C) GBHC - Regional T&E Program Managers
Forest Supervisors

Costs:

Ecosystem	Year 1987	1988	1989	1990	1991
GY, NCD, CY, S, (S)B, NC		X			X

OBJECTIVE 19: Each District Ranger make a presentation to the local service club on the Forest Service Grizzly Bear Conservation Program. The theme of the presentation will be on integrating grizzly bear conservation with other uses/values on National Forest lands.

Who: (L) District Rangers

(C) GBHC
Forest Supervisors and Staff

Costs:

Ecosystem	Year 1987	1988	1989	1990	1991
GY	X	X		X	
NCD	X	X		X	
CY	X	X		X	
S	X	X		X	
(S)B		X	X	X	
NC			X	X	

APPENDICES

APPENDIX A

Charting The Course

The Forest Service Grizzly Bear Conservation Program

JOHN L. WEAVER
National Grizzly Bear Habitat Coordinator
USDA Forest Service
Missoula, Montana

"Conservation is a state of harmony between people and land . . . a belated attempt to convert our collective knowledge of biotic materials into a collective wisdom of biotic navigation."

—Aldo Leopold

BY NO MERE HAPPENSTANCE DID ALDO LEOPOLD often cite the grizzly bear in his classic essays of *Round River* and *A Sand Country Almanac*. During his lifetime, he marked the loss of grizzly bears from state after state. The causes were relatively simple: (1) excessive mortality by humans, and (2) loss of suitable habitat. Thus, Leopold recognized that the great bear represented a true test of our collective ability to practice a conservation ethic.

In 1975, the United States Fish and Wildlife Service (USFWS) listed the grizzly bear in the contiguous 48 states as a "threatened" species . . . one which may become endangered unless conservation measures are carried out. Today, an estimated 750-900 grizzlies occur in the states of Montana, Wyoming, Idaho, and Washington. This represents a very small fraction of historic population numbers.

A Recovery Plan approved in 1982 by the USFWS Director targeted six areas in these states for potential recovery: (1) Northern Continental Divide, (2) Greater Yellowstone, (3) Cabinet-Yaak, (4) Selkirks, (5) Selway-Bitterroot, and (6) North Cascades. The USDA Forest Service is responsible for approximately 65% of the currently occupied grizzly range in these areas, and is committed to conserve the bear and to maintain the integrity of its ecosystems by providing quality management services for people, bears, and the land. Several major areas of uncertainty, however, have hindered these management efforts. These include the following:

What complexes of habitats in the landscape are necessary for viable populations of grizzly bears?
Where are these habitats located in the landscape?
How will these habitats respond to logging and/or fire?
What are the cumulative effects of various land uses on grizzly bears?
How can conditions for grizzly-human co-existence best be facilitated?

Transforming these uncertainties into positive actions is the challenge for researchers and managers responsible for the grizzly bear recovery. To this end, the Forest Service has designed and is implementing a five-point program to obtain and convert "our collective knowledge of biotic materials into a collective wisdom of biotic navigation."

Point 1. *Develop and verify models of grizzly bear habitat relationships.*

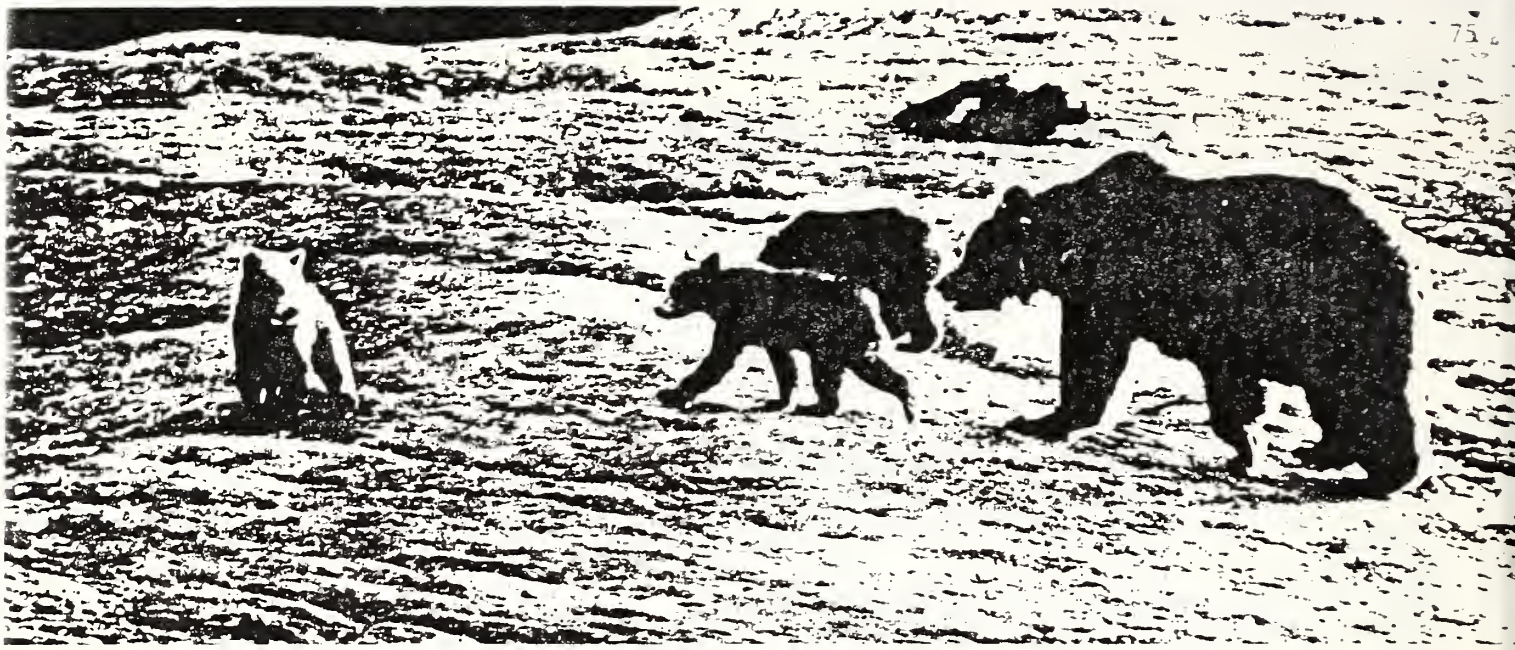
Our understanding of habitat selection by grizzly bears is still rudimentary in spite of studies of grizzly bear habitats and diet from various portions of its range. We still need to know at what scale grizzly bears select habitat; what landscape patterns of key habitats provide for the spatial and temporal needs of the bears; and how do these habitat relationships vary among different ecosystems? Some of the conceptual and analytical tools emerging from landscape ecology may enhance our understanding of grizzly bear habitat relationships.

Point 2. *Inventory and map plant communities of the grizzly bear landscapes.*

The Forest Service is now mapping its lands within the different recovery areas using a common classification system of habitat types, seral community types, and habitat components. Such a classification provides an expression of both the potential and the current vegetation on a particular site. Forest Service researchers are also developing models of vegetation succession to predict the occurrence of seral plant communities following logging and/or fire. Inventory and mapping of the lands outside wilderness will be completed soon using conventional aerial-photo methods and extensive field verification. Finally, the Forest Service, along with other agencies, is investigating the use of remote-sensing technology — including LANDSAT multispectral imagery — for mapping wilderness lands.

Point 3. *Continue to develop transdisciplinary resource prescriptions which maintain or improve grizzly bear habitat and minimize the potential for grizzly-human conflicts.*

Nearly every human activity in grizzly country can affect the bear's habitat and/or behavior, and may in turn pose a risk of direct grizzly-human conflict and subsequent mortality. To mitigate these impacts, the Forest Service has participated with the USFWS, the Bureau of Land Management (BLM), and the National Park Service (NPS) in the development of the "Interagency Grizzly Bear Guidelines." Furthermore, in drafts of Forest Plans, the Forest Service has developed resource standards and guidelines that coordinate grizzly bear



Female and three cubs. Mother wore a Radio Collar for 8 years.
Photo by John J. Craighead

management with other land uses (e.g. wildlife, timber/fire, range, recreation, and minerals). A major emphasis for the near future will be to translate our understanding of grizzly bear ecology and behavior into even more effective management guidelines.

Point 4. *Develop and implement a process for evaluating and managing cumulative effects of all activities on grizzly bears and their habitat relationships.*

Even though the effect on grizzly bears of any single resource activity (e.g. logging, mining, increased back-country use, etc.) may not be great, the cumulative impact of all such activities over space and time may indeed be substantial. The Forest Service is currently leading an interagency effort to further develop, implement, and verify a computerized process for evaluating and managing the cumulative effects of resource activities on grizzly populations. The model will permit simulation of proposed changes in land use and prediction of the associated consequences for grizzly bears. With this model a manager will be able to ask a series of "what if . . . ?" questions and to explore the relative consequences of each. The model will also allow the managers to determine which activity contributes most to the simulated effects, and whether a given land use influences habitat per se, habitat use, and/or survivorship of grizzly bears. By using the cumulative effects model with the established discipline of decision analysis, the manager will have powerful tools for enhancing the quality of decisions.

Point 5. *Improve public understanding of grizzly bears and their habitat requirements and facilitate grizzly-human coexistence.*

In cooperation with other agencies, the Forest Service has developed and implemented an integrated program to promote public education, human safety, and grizzly bear survival. The four basic aspects of this program are: (1) information and education, (2) reduction of bear attractants in camps, (3) conflict-prevention patrols, and (4) control of "problem" bears.

The first aspect of this program involves a campaign to inform people about the grizzly and its threatened status and to educate them about recreational practices that reduce the risk of grizzly-human conflicts. State and federal resource agencies, as well as private groups, have been actively conducting a program called "Bear Us In Mind." This program has produced brochures, posters, signs, and slide presentations; filmed an 11-minute video on "Visiting Grizzly Country;" recorded radio broadcasts and news releases; established demonstration camps at trail heads; and made personal contacts with people out in grizzly country. The second aspect is designed to reduce bear attractants in and adjacent to camps and trails before conflicts can occur, and before any bears become positively conditioned to such attractant(s). The Forest Service has been actively developing and testing methods for keeping food attractants in campsites away from bears. The third aspect involves interagency patrol teams providing back-country campers with information and advice to reduce the likelihood of bear conflicts. In 1984, these patrols spent approximately 4500 hours contacting about 2400 camping groups in grizzly country.

Sometimes, it is necessary to remove a grizzly bear from an area where it poses a threat to human safety. The fourth aspect of the program details the criteria by which a bear is classified a "problem" and how such "problem" bears should be treated.

This integrated five-point program will allow the Forest Service to navigate a course for grizzly bear conservation. It promises to be an exciting voyage over the next ten years to new shores of land management. But success will depend upon cooperation among public agencies, private organizations, and citizens at both local and national levels. As each day passes, all parties have ever more information and tools, or, as Leopold phrased it, more "biotic materials" at their disposal. Hopefully these will be used with responsibility and respect by all. In the final analysis it should be clear that we have sailed with commitment . . . commitment to a land ethic and its most magnificent symbol — the grizzly bear.

APPENDIX B

CHARTING THE COURSE

The Forest Service Grizzly Bear Conservation Program

Habitat Research Needs

INTRODUCTION

The grizzly bear (*Ursus arctos horribilis*) once ranged throughout most of the western United States. However, excessive human-caused mortality and loss of suitable habitat resulted in a significant decline in the distribution and abundance of grizzly bears. Today, an estimated 750-900 grizzlies occur in portions of Montana, Wyoming, Idaho, and Washington.

In 1975, the U.S. Fish and Wildlife Service listed the grizzly bear as a "threatened" species. In the Endangered Species Act of 1973 (as amended), Congress declared that all Federal agencies shall seek to conserve endangered and threatened species and the ecosystems upon which they depend. In 1982, the U.S. Fish and Wildlife Service approved a Grizzly Bear Recovery Plan which identified six recovery areas: (1) Northern Continental Divide, (2) Greater Yellowstone, (3) Cabinet-Yaak, (4) Selkirk, (5) Selway-Bitterroot, and (6) North Cascades.

The USDA Forest Service plays a vital role in grizzly bear conservation because approximately 65 percent of the currently occupied range occurs on National Forest System lands. The principal role of the Forest Service is to provide suitable habitat toward recovered populations of grizzly bears and to minimize potential for grizzly-human conflicts. Grizzly bear recovery areas include over 8 million acres of National Forest lands which also provide habitat for other wildlife species, recreation opportunities, wood products, livestock forage, minerals, and watersheds.

The mission of the Forest Service Grizzly Bear Conservation Program is to conserve the grizzly bear and the integrity of its ecosystems by providing quality management of the land and positive service to people. The goals are to provide (1) interdisciplinary management of grizzly bear ecosystems, (2) organizational design, processes, and culture that support grizzly bear conservation, and (3) for information, education, and involvement.

The purpose of this paper is to identify and briefly describe four broad areas of research needs of the Forest Service Grizzly Bear Conservation program.

RESEARCH INITIATIVE

Several major areas of biological and sociological uncertainty have hindered the land manager in fulfilling a commitment to the program mission.

What complexes of habitats in the landscape are necessary and sufficient for viable populations of grizzly bears?
What is the cumulative effect of land uses on grizzly bears?
How do these habitats respond over time to perturbations such as logging and/or fire?
How can the abundance, distribution in the landscape mosaic, and stability over time of certain key bear habitat components be enhanced?
How and why do various segments of the public value grizzly bears? How can information and education about grizzly bears be enhanced?

Transforming these uncertainties into positive actions is the challenge for researchers and managers of grizzly bear ecosystems.

Four broad areas of integrated research needs can be identified:

(1) Cumulative Effects Assessment including Habitat Capability Models

(2) Models of Vegetation Succession

(3) Autecology and Biogeography of Selected Plant Species

(4) Sociology including Value Formulation and Effectiveness of Information and Education Efforts.

Cumulative Effects Assessment including Habitat Capability Models

Several variations of a basic Cumulative Effects Assessment (CEA) Model are being developed in the various grizzly bear ecosystems. The basic CEA has three submodels: (1) Habitat, (2) Displacement, and (3) Mortality. The primary outputs are a "habitat effectiveness" value and an index to mortality risk.

The Cumulative Effects Assessment Models need to be calibrated to a recovery objective (i.e., habitat capability). Values for the parameters in the habitat and displacement models need to be verified, and a threshold of habitat effectiveness (or, conversely, of acceptable displacement) needs to be determined.

Models of Vegetation Succession

Managers of grizzly bear ecosystems need to be able to better predict successional pathways of certain vegetation types following perturbations such as logging and/or fire. The response of shrubs, forbs, and grasses to various silvicultural prescriptions (including various site preparation treatments) or fire regimes needs to be described and measured. The work of Arno et al. (1985) is a good example but needs to be extended to other areas. In addition, the effects of silvicultural practices other than clearcut need to be examined. Succession models are needed for those habitat types which comprise most of the commercial timber base in the various grizzly bear ecosystems, including Abla/Vasc-Pial, Abla/Vagl, and the Clun types of the Pien, Abgr, Thpl, Tshe, and Abla series.

Autecology and Biogeography of Selected Plant Species

Relatively little is known or compiled about the autecology and biogeography of several key food plant species for grizzly bears, including

Whitebark Pine (*Pinus albicaulis*)

Huckleberry (*Vaccinium globulare*)
Buffaloberry (*Shepherdia canadensis* and *S. argentea*)
Mountain Ash (*Sorbus scopulina*)
Serviceberry (*Amelanchier alnifolia*)

Cow Parsnip (*Heracleum lanatum*)
Yampa (*Perideridia gairdneri*)
Biscuitroot (*Lomatium cous*)

More information is needed on the factors affecting the distribution and abundance of these species: how does the productivity of these key foods vary over time, how synchronous are such fluctuations across various spatial scales, and how do grizzly bears respond to size and interspersion of patches of key habitat components in the landscape? How do these species respond to disturbance (logging, grazing, fire)?

Sociology including Value Formulation and Effectiveness of Information and Education Efforts

Grizzly bear conservation takes place in a socio-political arena. It is a complex and often controversial public issue. Much of the controversy arises from clashes between competing values (interest groups) whereas some of it develops from distorted information or inadequate communication about grizzly bears and their management. The success of grizzly bear conservation will depend, in part, upon public understanding and support.

The works of Kellert (1983, 1985) and Frost (1985) on public values concerning endangered or threatened predators are good examples of information needed about values attached to grizzly bears. Managers need to know how to enhance the current I&E materials, using information similar to that of Maw (1986) and Frost (1985).

CHARTING THE COURSE

The Interagency Grizzly Bear Committee (IGBC) has a Research Subcommittee which (1) identifies and proposes needed research programs, (2) coordinates needed research activities approved by IGBC, (3) reviews and comments on research plans, and (4) reviews research findings. Dick Krebill, Assistant Director of the Intermountain Station, is the appointed Forest Service representative on the Research Subcommittee while John Weaver, National Grizzly Bear Habitat Coordinator, is an ex-officio but formal member. Current grizzly bear research focuses on development of population trend monitoring techniques and on the effects of open roads and backcountry recreation use upon grizzly bear behavior and habitat use. These are important items for research but do not address fully the information needs of the land manager for maintaining or improving the integrity of grizzly bear ecosystems in a multiple-use context or for enhancing public understanding of grizzly bears and their management.

This Habitat Research Initiative will provide information for meeting the mission of the Forest Service Grizzly Bear Conservation Program. It is compatible with the overall wildlife and fish habitat research program as prepared by the Forest Environment Research staff (December 1, 1984) and provides the expected benefits outlined therein. Specific research proposals will be developed, prioritized from a national perspective, and submitted for review to the IGBC Research Subcommittee. This research could be completed on an accelerated 5-year program. In summary, it will (1) provide the on-the-ground manager with the information he or she needs, and (2) enable the Forest Service to be a leader in understanding and managing the ecosystems upon which the grizzly bear depends.